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SUMMARY

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STANDARDS AND ENGINEERING EFFICIENCY

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STANDARDS AND ENGINEERING EFFICIENCY

1. Engineering efficiency is of major importance to all aspects of economic development, whether in engineering production itself or in exploitation of raw materials, in agriculture, and public services. Standards are required for an efficient economy and as the means of profiting from engineering experience. The use of standards, as of other tools in industry, has to be learned. They cover qualities and grades, methods of test and assessment of results, dimensions, performance and ratings, maintenance and operation of equipment. Their value depends on wide acceptance. Hence the need for the adoption of engineering standards and practices as a national policy to ensure an integrated industrial economy, interchangeability of components and machines and effective use of raw materials.

2. Engineering standards are firmly established in the highly industrialized countries but are not static; they are under constant review as new materials and techniques are developed. A country deciding upon its own national standards can use much of the material available in other countries standards and in international recommendations but will have to select what is appropriate to its own conditions. Facilities for investigation of technical problems and for testing will be required in establishing standards and in ensuring compliance with them.

3. Effective implementation of standards requires that they should be so drawn as to command acceptance from manufacturing and using interests. Accordingly the standards organization should be such as to enlist co-operation in the preparation of standards from all interests. To make all standards obligatory by law, as a means of implementation, has serious disadvantages: it tends to result in minimum standards and in inflexibility; if obligatory standards are not effectively policed they will fall into disrepute, while the cost of enforcement may be uneconomic. Certain standards, however, - particularly those for safety - are rightly made obligatory. To ensure voluntary adoption of standards generally resources will be required for publicity.

4. The use of standards conserves resources of man-power and materials by reducing many tasks to routine, by reducing the amount of supervision required, by facilitating ordering, replacement, servicing and holding of stocks and by the economic utilization of the appropriate grade of material.

5. Existing fundamental standards for engineering provide invaluable text books e.g. on terms and definitions, symbols, and conventions for drawing practice; they provide a common technical language in the engineering plant, in purchasing and tendering and in exchange of technical information.

6. Methods of test for basic engineering materials, standards for components in wide general use and for essential dimensions and performance of general engineering equipment, codes of practice for installation, maintenance and transport - these form the main groups of standards to be established and introduced. The range of types and sizes of components and equipment to be specified should be the minimum compatible with reasonable choice.

7. In the efficient running of engineering industry a major factor is the confidence of the worker in safety measures. This confidence will be secured by the use of adequate and consistent safety standards for equipment, machines and tools, for personal protective clothing, and for symbols etc. warning of danger.

8. The individual undertaking will select from national standards those required for its own purposes; this task, within the framework of its general policy, should he be assigned to an individual "standards engineer" or standards department, working in consultation with the design, production, purchasing and selling departments.

9. The consistent achievement by the engineering firm of the level of quality and accuracy of dimensioning required by the specifications to which it will manufacture and sell can be facilitated if the standards themselves lay down the methods of testing, the sampling rates and inspection procedures. This will minimize disputes about defective products. In some cases, for items crucial to safety, 100% inspection and testing will be required.

10. International standards agreement, aimed at removing the barriers to international trade, international services and technical co-operation, already covers a wide range of engineering activity. The recommendations of the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC) are designed to form the basis of national standards and the many recommendations already issued have been widely adopted by the member countries. Their adoption enables a developing country to enlarge its sources of supply, to compare tenders on a uniform and competitive basis and more readily to secure acceptance of its exports in world markets.

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